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ARTICLES

THE LEGALITY OF MARGINAL COST PRICING FOR UTILITY SERVICES

David K. Kadane*

INTRODUCTION

Two main social objectives were at the root of early public control over utility rates: (1) the need to prevent a utility from earning an excessive rate of return as a result of its monopoly position, and (2) the need to prevent the utility from playing favorites by charging varying prices for like service. These objectives were negative: They were intended to prevent profiteering by, for example, preventing the ferryman and the innkeeper from taking unfair advantage of customers with no alternative. They were also intended to prevent unfair discrimination; for example, a petroleum shipper could not be permitted to obtain secret rebates which could give it an economic advantage over its competitors. With respect to this second objective, the regulatory statutes acknowledge that while some forms of discrimination may exist, “undue” or “unjust” discrimination, and “unreasonable” preferences are prohibited.1

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1. The regulatory statutes forbidding undue discrimination among consumers vary in form, but their interpretations of what constitutes discrimination do not differ significantly. Thus, under the Interstate Commerce Act of 1887, a common carrier is engaging in a forbidden “unjust discrimination” if it charges one customer more than another for “a like and contemporaneous service . . . under substantially similar circumstances and conditions,” 49 U.S.C. § 2 (1970), and it may not give an “undue or unreasonable preference or advantage,” either to one customer over another or to one area over another, id. §

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As long as the utility was reimbursed for no more than its prudently incurred costs, including its cost of capital, there would be no profiteering; as long as each consumer paid his share of the costs he was imposing on the utility, discrimination might exist, but only in the sense that the prices paid by each consumer would be different. This would not be unfair or undue discrimination because the price differentials would result from cost differentials. Consequently the key to the solution of both problems lay in the concept of “cost.”

Primary attention in cases determining rates was focused on the first of these two objectives—the prevention of abuse by a utility of its monopoly position to obtain monopoly profits. Abuse was prevented by limiting the utility’s overall revenues to cost, including cost of capital. Little attention was devoted to the relative responsibility of various consumers to furnish those overall revenues. Indeed, until recently there was a widespread view that the determination of a rate structure was a “practical” act best left, at least initially, to the utility’s business judgment\(^2\) inasmuch as the utility would not have an incentive to impose an unfair allocation.

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3(1). Under the Federal Power Act, utilities are forbidden to have rates under the Act which “(1) make or grant undue preference or advantage to any person . . . or . . . (2) maintain any unreasonable difference in rates . . . either as between localities or as between classes of service,” 16 U.S.C. § 824d(b) (1970), and the Federal Power Commission may supersede any rate which it finds “unjust, unreasonable, unduly discriminatory or preferential,” id. § 824d(b). The same language is found in many state statutes, e.g., Ill. Ann. Stat. ch. 111 2/3, §§ 38, 41 (Smith-Hurd 1966 & Supp. 1977). Many state statutes use the language of the Interstate Commerce Act, e.g., N.Y. Pub. Serv. Law §§ 65(2)-65(3) (McKinney 1955). The New York Act adds a provision, relevant to our inquiry, permitting electric and gas utilities, with approval of the regulatory commission, to establish “classifications of service based upon the quantity used, the time when used, the purpose for which used, the duration of use or upon any other reasonable consideration,” id. § 65(5), as well as a ban on rates which are “unjust, unreasonable, unjustly discriminatory or unduly preferential,” id. § 65(5).


The Board takes the view that once it has performed its function of establishing a rate base and determining required revenue the resultant required rate schedules should be the function of management and when determined should only be interfered with by regulatory bodies if it is clearly demonstrated that those schedules are unfair, unjust, or unduly discriminatory, as between the different classes of utility customers.

Moreover, many electric utility companies were created through the combinations of smaller companies, each with its own rate structure applicable to its own territory and perpetuated in that territory by the combination company. As these territorial rate differences could seldom be defended on any basis other than an historical one, much attention was focused on achieving a uniform rate structure applicable within the entire territory. Politically, however, it is extraordinarily difficult for a utility to raise rates in a major part of its territory and lower them in another, and it is just as difficult for a regulatory commission to approve such a step. Consequently, whenever a rate change was to take place, the process of eliminating “divisional” rates generally took the form of gradually bringing closer together the rates in various divisions. The regulatory commissions thus saw equity in equality except in the uncommon situation where there was a clear cost justification for a territorial disparity.

After the utilities had achieved uniform territory-wide rates for each class of service, there was a great aversion to upsetting the peaceful balance which had been achieved. When overall revenue requirements indicated that a rate decrease was possible, the tendency was to apply the same percentage of decrease “across-the-board,” so that no class of customers would feel “left out” and discriminated against. The same tendency existed when rate increases were involved. The utility’s primary desire was to minimize its problems in a rate proceeding, and the regulatory commissions understood the crudity of the prevailing concepts of cost so well that a convincing attack on across-the-board treatment could rarely be made.

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5. Although the definitions of the various classes of service (e.g., residential, commercial, industrial, municipal, etc.) tended to be similar from one territorial division to the next, the process of attaining uniform territory-wide rates also required the adoption of uniformly defined territory-wide classes.
6. Other practical considerations, seldom articulated, influenced changes in the structure of a rate for a given class (as distinguished from the maintenance of interclass balance through across-the-board treatment).
7. See text accompanying notes 38-39 infra.
The prevailing concepts of cost were developed in the first instance by the Interstate Commerce Commission, which had to deal, for example, with the varying costs of competing railroads, with variations in the weight, volume and value among commodities, and with competition from other modes of transportation, decades before the central steam generating station inspired the consolidation of small electric utilities. Several elements of the cost of running a railroad would vary with the amount of business on a particular line of the railroad. One such variable was the cost of the fuel required to run the trains. Another variable, “joint” costs, included the “fixed costs” such as depreciation on the roadbed and stations and were incurred for many lines and many commodities. Still other expenses, such as maintenance of the roadbed, could be seen as caused in part by the degree of utilization, but it was also evident that some maintenance of the roadbed would be needed merely as a result of the passage of time. Consequently, such expenses would be allocated in part to variable costs and in part to fixed costs. A thorough cost analysis would have to deal with every expense in some such manner, and would be known as a fully distributed cost study (hereinafter referred to as FDC). When applied to electric and gas utilities, in addition to the variable costs which fluctuate with the amount of usage, and the fixed costs which are incurred predominantly because of the magnitude of the demand irrespective of the amount of usage, the usual FDC study included a third category of costs. This third category, “customer costs,” are costs which result from the simple fact of having a customer on the line, regardless of the magnitude of the customer’s demand or utilization.

The term “cost,” however, does not necessarily mean FDC. For example, if we have a machine capable of stamping 1000 automobile fenders in a given period of time but actually stamping only 500, the “cost” of the 501st fender may be seen as little more than the raw material and energy required for that unit. But if the price charged by a utility were no more than that variable cost of production, the utility would not be able to service the debt and equity securities which financed its expensive

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9. Although cost studies were made by the ICC from its earliest days, not until 1939 did it establish its Section of Cost Finding, formalizing its procedures. See Day, Significance of Costs as a Rate Factor, in Tariff Rates and Practices 271 (Transp. Law Inst. 1970).
plant. Thus, for purposes of making a utility viable, it is necessary to enable it not only to recoup the small extra cost of the marginal unit of production, but also to generate enough money to meet fixed costs which continue regardless of whether the extra unit is produced.

In the foregoing hypothetical the variable cost of the 501st unit of production is low because there is excess plant capacity. Suppose, however, that the plant is operating at its full capacity of 1000 units; then, the variable cost of the 1001st unit would have to include the cost of a new machine, and would be higher than the average cost of the first 1000 units because the whole cost of the new machine would be added to that one additional unit of production.

One can calculate the variable and fixed costs (the sum of which is FDC) by examining the utility’s income account. As utility company accounts are kept on an accrual basis, the income account reflects not only the immediate out-of-pocket expenses of the present production level, but also the portion of the fixed expenses allocated to the period involved. What must be observed is that FDC reveals nothing about what it would cost to produce one extra unit, or what would be saved if one fewer unit were produced.

FDC serves the first ratemaking objective, which is to enable the utility to recoup from its consumers all, but no more than all, its costs. In the past, FDC (despite ambiguities, fictions, and the supplemental assumptions which must be made when it is used) may also have served moderately well in the search for the second objective — avoiding unfair discrimination among classes of consumers. The use of FDC for this latter purpose, however, is now being challenged by marginal cost pricing.

10. The electric utility industry is one of the most capital-intensive industries, although the ratio of fixed costs to FDC has declined as a result of the sharp increase in fuel prices in recent years.

11. This is an oversimplification. In practice, the income account must be adjusted to reflect the cost levels and other conditions reasonably to be anticipated in the near future, since ratemaking decisions will be effective in a future period which may involve costs and other conditions quite different from those experienced in the period covered by income account used. Moreover, the return on equity must be adjusted from the return actually realized, to a level which the regulatory agency deems appropriate.

12. Here we are using, but not necessarily espousing, the dollar convention of the accountants, pursuant to which no effect is given to changes in the real value of a dollar over time. The possible diseconomies resulting from the use of that convention, and the possible legal consequences of its use, are beyond the scope of this article.
For our purposes, the marginal cost of an additional customer or an additional load can be defined as the extra cost which will be incurred by the utility within a reasonable time to render the additional service. It is left to others to undertake the formulation of a definition of marginal cost pricing which will incorporate the multiplicity of supplemental requirements for the application of the process.

The issue addressed in this article is whether marginal cost pricing of utility services (particularly electric and gas), coupled with the use of other principles of economic efficiency, is lawful in the face of an attack based on an assertion of "undue discrimination." Discrimination among consumers may be said to occur when the price per unit of consumption differs from one consumer to another. Because the conditions under which the consumption takes place differ considerably, though, costs (however defined) vary. Therefore, a "just and reasonable" rate structure may require a form of discrimination to which the law presents no obstacle inasmuch as only "undue" discrimination is forbidden. Discrimination may be thought of as "undue" when it is not justified by cost differentials, but, as will be shown in the following section, the judicial decisions will not support any such definition. Instead the courts view discrimination as "undue" when it is not justified by ratemaking considerations, such as cost, which are within the scope of the regulatory authority to employ.

**The Standard for Determining the Legality of Marginal Cost Pricing**

On judicial review of a decision of an administrative agency, the fundamental question is whether the agency has confined its considerations to factors which the legislature has provided.\(^\text{13}\) While there are other issues, particularly procedural ones, which can arise on judicial review, the general principle of judicial review has been stated as follows:

> When Congress establishes an administrative agency and lays down general standards for it to follow, the agency has the function of filling in the interstices which have been deliberately left open. The duty of the courts. . . . is to see that the agency has stayed within the bounds for the exercise of discretion fixed by

Congress, and that it has applied the statutory standards and no others.\textsuperscript{14}

The typical regulatory statute, however, expresses its standards in the most generalized forms providing for instance, that the agency is to act "consistent with the public interest,"\textsuperscript{15} or in "the interest of investors and consumers,"\textsuperscript{16} or that a rate discrimination may not be "undue."\textsuperscript{17} Such terms as "just and reasonable" and "fair and equitable" abound. How then, is one to apply the test to see whether the considerations used by the agency are within the legislative intent?

This question arose in its earliest form when regulatory statutes containing such broad language were attacked on the ground that they constituted unconstitutional delegations of legislative authority. The leading Supreme Court decision is \textit{New York Central Securities Corp. v. United States},\textsuperscript{18} in which the Court, discussing a statutory criterion of the "public interest," said: "It is a mistaken assumption that this is a mere general reference to public welfare without any standard to guide determinations. The purpose of the Act, the requirements it imposes, and the context of the provision in question show the contrary."\textsuperscript{19} Much more recently, in \textit{NAACP v. FPC},\textsuperscript{20} the Court held that the fact that the Federal Power Commission has jurisdiction, pursuant to the Federal Power Act\textsuperscript{21} and the Natural Gas Act,\textsuperscript{22} to set rates in the "public interest," does not mean that it is empowered to eradicate discriminatory employment practices of electric utilities and natural gas companies except insofar as such discriminatory practices cause an increase in costs and have an adverse effect on rates.

We can thus narrow our inquiry to the question whether the ratemaking criteria used by the marginalists are permissible in the context of regulatory statutes which forbid "undue discrimination" and require that rates be "just and reasonable." This

\textsuperscript{17} See note 1 supra.
\textsuperscript{18} 287 U.S. 12 (1932).
\textsuperscript{19} Id. at 24.
\textsuperscript{20} 96 S. Ct. 1806 (1976).
must be answered with reference to the legislative objectives of those statutes.

**FDC COMPARED WITH MARGINAL COST ANALYSIS**

If marginal costs were equal, in the aggregate, to FDC, there would be no legal problem arising from the use of marginal cost pricing. If each increment of load were priced at such a level that the extra cost of serving it were exactly met, there would be no discrimination unless one were to argue that charging varying percentages of FDC to different loads is discrimination. A customer can scarcely complain at having to pay the full extra cost of serving him, however, especially when other customers are doing the same thing. Moreover, there is no legal requirement that rates be proportionate to FDC.

The difficulties arise when marginal costs in the aggregate are greater or less than FDC. When marginal costs exceed FDC, there is no accepted way of removing the excess revenue to prevent profiteering, and when marginal costs are less than FDC there is no other source of funds to make up the utility’s revenue requirement. Thus, there is a revenue constraint on the use of marginal costs. Often there are practical considerations which at least temporarily take care of the situation and allow the basic relationships arising from a marginal cost analysis to be used without violating the revenue constraint. But when such a solution is not at hand, the marginalist may use a second principle: The more the customer will be influenced by the price in deciding whether to impose the load, the closer the price should be to the marginal cost; the greater the chance that the customer will be unaffected by the price, the greater the willingness to have the price vary from marginal cost. This produces discrimination in the sense that the consumers will be paying differing percentages of the marginal costs to serve them. Discrimination will be deliberately undertaken in such a way that, in the language of the economist, variance from marginal cost will be in inverse proportion to the price-elasticity of the load. The objective of the marginalist, as we shall see, is to achieve greatest efficiency in a number of ways.

There are thus two drastically different ways of looking at cost. The first, FDC, takes into account all expenses recorded in

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23. For an overview of the practicalities, see 1 A.E. Kahn, The Economics of Regulation 83-86 (1970).
the income account but is completely insensitive to costs at the margin. The second, marginal cost analysis, focuses on costs at the margin but requires supplemental rules to meet the revenue constraint. Until recent years only FDC was used in rate design; in the past decade, however, there have been three major developments which have required reconsideration of whether rate design can sensibly be based on FDC.

(1) America is in the early stages of a fuel crisis. Once a nation more than able to supply all its own needs, it is increasingly dependent on imported fuel oil. The best hydroelectric sites are in use. Environmental concerns retard expansion of coal production. Despite higher wellhead prices, production of petroleum and natural gas does not keep pace with demand. Geothermal energy is in its infancy, as is the use of solar energy. Even fuel for atomic plants is scarce and becoming more expensive.

Moreover, attempts to deal with the fuel crisis by the adoption of voluntary measures have been unsuccessful. Commuting from suburbs to city by passenger automobile has not given way to mass transit. Intracity automobile traffic increases while subways lose passengers. The 1976 upsurge in automobile sales has been in larger-model cars, not in fuel-miserly compacts and subcompacts.

One possible way of ameliorating some portion of the fuel crisis is to design utility rates in such a way as to discourage uneconomic usage. FDC is useless for this purpose, whereas marginal cost analysis is aimed specifically at the problem.\(^\text{24}\)

(2) Concomitant with the fuel crisis is the greatly increased price of fossil fuels. In an earlier day the electric bill took such a small portion of the consumer’s total income that not much excitement was generated with respect to the form of the rate. Public attention, when there was any at all, tended to focus on preventing the utility from profiteering as a result of its monopoly position.\(^\text{25}\)

But today, as a result of both greater utilization and higher fuel prices, the utility’s rate design has a visibility which demands close attention to even small differences in cost allocation theory. FDC, as will be shown,\(^\text{26}\) is a crude tool for allocating costs and does not even deal with many of the major allocation

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24. See text accompanying notes 28-29 infra.
25. See generally text accompanying note 1 supra.
26. See text accompanying notes 40-42 infra.
problems, whereas marginal cost analysis is a sophisticated instrument, capable of rational development and of deliberate, principled choice.27

(3) Utility rates, like other prices in our economy, notoriously ignore external costs. While some in the community might not have wanted a new electric generating station, the utility had a common law duty (now generally changed to a statutory duty)28 to meet all demands and, in the long run, zoning considerations had to give way to the public demand for additional service.

Increased sensitivity to the environment, however, has shifted the balance. There is a growing realization that the environment is a resource which will be expended by the utility in meeting new loads, and to an ever greater extent that external cost is being internalized through more stringent regulation. Yet the cost of the restrictions is imposed by FDC on all customers and loads alike, not just on the new business or on that portion of the new business which the customer might forego if the service were priced to cover all the additional costs it was imposing. It does little good, in terms of preserving the environment, to make the utility pay a steep price for readying a scarce new generating station site, if the bulk of the extra cost will not be borne by the peak loads which require the expansion. Charging the full price to the consumer might discourage the consumer from imposing the extra load.

In contrast to FDC theory, marginal cost analysis is specifically geared to impose the new high cost on the peak load, not only as a matter of fairness, but also to discourage load additions which might not occur if the consumers had to bear the full additional cost they were imposing on the utility.29

**The Objectives Sought by Use of Marginalist Principles**

The first complaint which must be addressed arises when one class of consumers is suffering “discrimination” in the sense that the revenue produced by that class’s rate is a greater percentage

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27. This is not meant to imply that a marginal cost study is simple. But when a problem arises in a marginal cost study there is a theoretical basis on which its solution may be assayed, whereas there is no corresponding lodestone when one must select one method of allocating FDC over another method.


29. This is not to suggest, for example, that the old air-conditioner should have a favored status over the new one. That question and similar related concerns involve practical accommodations which will have to be made over time.
Marginal Cost Pricing

of its marginal cost than in the case of another class. Such a situation can arise in either of two ways.

First, when marginal costs exceed FDC, that is, "average" costs, an excess of revenue would be produced if all rates equaled marginal costs. If the inverse price-elasticity principle is employed, the most price-elastic customers will pay rates closest to their marginal costs, because the objective would be to discourage those customers from over-consumption. This is the class which is experiencing discrimination, as its rate is a greater-than-average percentage of marginal cost. To the extent that their price exceeded average costs and approached marginal cost, they would tend to restrict their utilization. To the extent that their price departed from marginal cost and approached average cost, some part of the extra expense they are imposing on the utility would have to be paid by the other consumers.

If waste is then defined as the "using up" of resources at a price to the user of less than their cost, the economic objective which the marginalists are seeking, where marginal costs exceed FDC, would appear to be the elimination of waste. An example would be incremental service to the electric consumer at the time of the peak demand: If the price is set close to marginal costs, the user will pay for the additional capacity which must be built or purchased by the utility. Another example would be an additional gas load, for which the utility is obliged to obtain new gas at a price higher than its average costs.

One ultimate effect, therefore, of requiring price-elastic customers obliged to pay their way, is that they will be discouraged from wasting energy in the above sense. This is desirable from the viewpoints of both society and consumers if only because the conservation of resources and the diminution of waste makes it possible to maintain lower costs and rates. The second ultimate effect is that the use of efficient rates will relieve the inelastic customer of the burden of paying for part of the marginal cost of wasteful use by the elastic customer.

In short, viewing the situation from the standpoint of its effect on consumers, when marginal costs exceed FDC, the marginalists oblige the elastic customers to pay a higher percentage

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30. In the economist's terminology, the marginalist seeks to minimize distortions in resource allocation.
of their marginal costs in order to achieve lower rates and not impose part of them on another class.

Apart from the cost effect on consumers, pushing the rate for price-elastic customers towards the marginal cost will tend to discourage wasteful utilization of energy and to conserve the resources otherwise needed for additions to the utility's capacity. Conservation may be seen as desirable from the point of view of keeping down the costs to the consumer and nonconsumer, present and future.\(^2\)

The second way in which discrimination may arise is when marginal costs are lower than average costs. In this case the use of marginal costs as the price for all classes would result in a revenue deficiency. To the extent that the deficiency is made up by increasing the rate of the price-elastic classes, their consumption will be discouraged, and they will tend not to make the contribution they would have made towards absorbing part of the sunk costs had their rate been closer to marginal cost. Thus, they would get no benefit, and the price-inelastic customers would be deprived of the opportunity to achieve a lower rate. In such a case it is the price-elastic class which is experiencing discrimination. The efficient solution, under the rule of inverse price elasticity, is again to have the rates for the price-elastic customers approach marginal costs, while the utility's deficiency in total revenue is compensated for in the rates of the price-inelastic customers.

The effect of this solution on the revenue deficiency problem is to induce the price-elastic consumers to maximize their contribution to the absorption of the fixed cost, the less the price-elastic customer will buy; thus the inelastic customers will have less of the burden shared, and will have to pay higher rates.

Another goal is removal of the discouragement facing the price-elastic customers if their rates are greatly above marginal costs. When their rates are greatly above marginal costs, underutilization of the service and diseconomy may result. Looking at the situation again from the standpoint of consumers, when marginal costs are less than FDC, the objective of the use of marginalist and efficiency principles is the attainment of lower rates. When FDC is higher than marginal costs, and the rate is lowered to marginal cost, there is also the added benefit to the public of a more rational use of society's resources.

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The ultimate goals, then, of the regulatory bodies which use marginalist principles are:

1. Lower rates;
2. Avoidance of forcing one class to pay part of the marginal costs of serving another; and
3. Encouragement of a rational use of society's resources, that is, encouraging use when the costs caused by the use are paid by the user, but discouraging use when they are not.

It could scarcely be argued that the goal of lower rates is not within the legislative purpose of a ratemaking statute. Furthermore, when the statute directs the regulatory agency to avoid "undue discrimination," it could not seriously be maintained that the agency does not have authority to posit as a goal the prevention of a shift of some of the marginal cost of serving one class onto the rates of another. What must be more closely scrutinized is whether a ratemaking agency is authorized to take into account the extent to which a particular rate discourages rational utilization of resources by causing inefficient resource allocation — either waste (in the sense of utilization without paying the full cost of what is used) or underutilization.

It can be argued that the efficiency of the economy, while a desirable goal in itself, when isolated, does not appear to be the sort of objective which legislatures intended ratemaking agencies to use as a justification for discrimination. One must wonder, for example, whether at a time of substantial unemployment the regulatory body would be free to require lower rates for labor-intensive firms and higher rates for capital-intensive firms\textsuperscript{33} (if indeed that would be a good economic prescription, or, at least, if the regulatory body thought it was). While this argument has a surface plausibility, it can be argued to the contrary that since regulation is a proxy for competition, and as marginal cost pricing is central to the competitive economy, the propriety of its use is implicit within the legislative grant of power. In any case, doubts as to whether the efficiency of the economy is a lawful regulatory goal would seem unlikely to arise, except in an extreme case where the benefit to the general economy is slight, and the discrimination considerable. A sounder economy, particularly one

\textsuperscript{33} Some support for this view can be found in the SEC's refusal to allow Michigan Consolidated Gas Co. to finance low and moderate income housing developments in the territory it serves because it did not have a "functional relationship" to the utility's gas business. \textit{In re} Michigan Consol. Gas Co., 44 S.E.C. 361 (1970).
which is less wasteful of its energy resources and its economic sites for electric generating stations, among other things, can be expected to produce lower rates for all.

Moreover, regulatory agencies are not always reluctant to use their power to advance broad social interests. A prime example is the use of the regulatory power with respect to freight rates designed to encourage competition in the economy. In 1892 when Henry W. Behlmer, the wholesale hay and grain dealer in Summerville, South Carolina, complained that the freight rate to carry hay the 748 miles from Memphis to Summerville was twenty-eight cents per hundred pounds, whereas the rate to carry it twenty-two miles farther from Memphis to Charleston was only nineteen cents, the response was that since Charleston was a seaport, grain and hay could reach it from Chicago by sea, and the Memphis markets could not compete with Chicago except at the preferential rail rate.\(^4\)

Thus the benefits of a more efficient economy can be seen as a proper goal for rate regulation. This unstated hypothesis underlay the decision of the New York Public Service Commission on August 18, 1976\(^5\) outlawing, in new buildings, the inclusion of utility service in a flat rent, since such inclusion leads to wasteful utilization. Absent this hypothesis, the increased utilization could have been taken care of by adopting a higher rate for this subclass of customers.

However, while there are these responses to a complaint that the soundness of the economy is not a permissible goal of utility ratemaking, we are not likely to see the problem arise in such an isolated form in a marginal cost situation.\(^6\) First, when marginal costs exceed FDC, and the rate structure of the marginalist discriminates against the price-elastic customer by making his rate approach his marginal cost, the price-elastic consumer has no reasonable basis for complaint at being made to pay his way. It is well within the authority of the ratemaking agency to require

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36. Cf. Re Duke Power Co., 7 PUB. U. REP. 4TH 239 (N.C. Pub. Util. Comm'n 1974). The Commission said its objective was to achieve a reasonable rate of return for each customer class "vis-a-vis" that of the other classes and of the company as a whole, which appears to reject marginal cost pricing. Id. at 245. On the other hand, conservation is said to be of profound importance to "all of our people" but the Commission did not go beyond exhortation. Id. at 246.
a consumer to pay the full monetary cost of his service. The fact that requiring the consumer to pay the full cost of his service is also desirable because it leads to conservation and to the avoidance of waste does not entitle the price-elastic customer to service at less than the cost he imposes.

When marginal costs are less than FDC, the inelastic customers are discriminated against. But the consequence of this discrimination, as noted above, is to give the inelastic customers lower rates than they would have had if the elastic customers had not been induced to take the service. It can scarcely be doubted that a ratemaking agency is using a legislatively authorized goal when it “discriminates” against the inelastic customers in order to provide lower rates for them. That this leads to a more efficient utilization of resources because the price-elastic customers are thereby not discouraged by price from a socially efficient use does not give the inelastic customers a grievance.

THE LIMITED USEFULNESS OF FULLY DISTRIBUTED COSTS

One of the objections to the use of marginalist principles is that as a result of the revenue constraint and the application of the inverse price-elasticity principle, there will be discrimination in the sense that different classes will pay different percentages of the marginal costs they impose. We have already dealt with that objection. Here we consider the assertion that undue discrimination results when different classes pay different percentages of FDC.

While the general concept of FDC seems relatively clear, when one considers the practicalities of rate structure, it proves to be grossly inadequate. First, FDC is a fuzzy concept which requires the use of many arbitrary conventions. Further, the effectuation of the public interest in the formulation of rates has required the use of numerous other criteria, including those which are at the heart of marginal cost pricing.

At this point some examples of the crudity of the FDC concept may be helpful. The electric industry is capital-intensive, that is, a large portion of its total costs is a function of investment in the plant. These costs include not only the return on the investment and the depreciation, but also the income taxes associated with the equity portion of the return, the real estate taxes, and

37. See text accompanying notes 32-33 supra.
38. See text accompanying notes 30-36 supra.
insurance. The total is considerable with an annual cost of perhaps twenty to twenty-five cents for each dollar of cost of plant. How should these costs be allocated among the various groups of customers?

To simplify the analysis, let us assume an electric system with exactly three customers. Customers A, B, and C each have a maximum demand of 10,000 kilowatts (kW). A's and B's demands occur on the hottest day in the summer, while customer C's maximum demand of 10,000 kW occurs on the coldest day of the winter, when A and B have zero demand. C, correspondingly, has no summer demand at all. Setting aside for the moment the carrying costs of transmission and distribution facilities, and concentrating on the carrying costs of generating facilities, which of the following bases of allocation should be used in designing the rates?

(1) The maximum demand on the system is 20,000 kW. Each customer has the same 10,000 kW of demand. Therefore each should bear one-third of the demand cost.

(2) If customer C were not on the line, the utility would still need 20,000 kW of capacity to meet the summer peak. Thus customers A and B should each bear half of the demand cost, and customer C should bear none of it.39

(3) We could divide the year into two periods, summer and winter. For the summer half, A and B would each bear one-half. For the winter, C would bear all of the cost. While there would be idle capacity in the winter, C, as the only winter customer, would have to shoulder all of the costs.

A rational case can be made for each of these alternate ways of calculating the demand cost of the generating facilities, as well as for many other bases, notably the esoteric "average and excess cost allocation" method.40

But observe the wide disparity among just these three methods:

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<thead>
<tr>
<th>Customer</th>
<th>Percentage of demand cost each customer would bear</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
</tr>
<tr>
<td>A</td>
<td>33%</td>
</tr>
<tr>
<td>B</td>
<td>33%</td>
</tr>
<tr>
<td>C</td>
<td>33%</td>
</tr>
</tbody>
</table>

Another method is based on the common conception that there are three general categories of cost: (1) costs which vary with demand as in the above example; (2) costs which vary with usage such as kilowatt hours (kWh) of electric consumption or volume of gas or gallons of water, and (3) "customer costs" — those resulting from the simple fact of having the customer on the line, regardless of the amount of demand or the amount of usage. The calculation of "customer costs" becomes important in rate-making when one wishes to determine the appropriate amount of the minimum bill, which can recompense the utility for its costs which do not vary with the amount of the demand or the amount of the commodity which is used.

Some customer costs such as the costs of reading the meter, maintaining the account and mailing the bill, can be calculated with little difficulty. But other customer costs are not so simple to envisage. For instance, the size of the gas distribution mains and electric distribution lines are indeed a function of the demand of the customer, but having some distribution facilities installed, no matter how small, can also be seen as a "customer cost."

Thus, one of several accepted techniques for calculating customer costs for purposes of determining the minimum bill is to include the estimated cost of constructing a distribution system of zero capacity. Serious and highly skilled people spend many hours calculating how much it would cost to run a subtransmission line of zero capacity to a distribution substation, to erect a distribution substation having no capacity at all, and then to construct a distribution line to a home with zero capacity to carry a load. The same thing is done with gas: A fictional trench is dug, only large enough to contain a gas main with an outside diameter of zero inches.41

It should be clear from these examples that while the general concept of FDC is useful and indeed vital in dealing with the question of whether the utility is reaping monopoly profits, the raw concept is of little help in solving the problem of allocating an expense among several customers who benefit from its incurrence. A third example will show that even when there is a single class of consumers, there can be thorny allocation problems.

Some costs are incurred out-of-pocket in the same period for which the rate is charged. Labor is one such cost and fuel (with

a lag) nearly so. Other costs are fully paid for in one period, although the benefits are to be obtained over many periods. Take, for example, an item of electric equipment with an estimated life of twenty-five years. We will want to spread the cost fairly over the twenty-five years, so as to avoid giving an undue preference to today's consumers, or to the consumers twenty-four years from now. How should this be achieved?

We are on no firmer theoretical ground than we were one-half century ago, when Mr. Justice Brandeis wrote in *United Railways & Electric Co. v. West*:

> And, finally, the protestants show that after the net expense in plant consumption is thus estimated, there remains the task of distributing it equitably over the assumed service life — the allocation of the amount as charges of the several years. There are many recognized methods for calculating these amounts, each method having strenuous advocates; and the amounts thus to be charged, in the aggregate as well as in the successive years, differ widely according to the method adopted. Under the straight line method, the aggregate of the charges of the several years equals the net expense for the whole period of service life; and the charge is the same for all the years. Under the sinking fund method, the aggregate of the charges of the several years is less than the net plant expense for the whole period; because the proceeds of each year's charge are deemed to have been continuously invested at compound interest and the balance is assumed to be obtained from interest accumulations. Other methods of distributing the total charge produce still other results in the amount of the charges laid upon the operating expense of the several years of service.

55. Thus, if a unit costs $100, has a service life of 25 years and no salvage value, and the rate of interest is 5 per cent, the charge to operating expenses for depreciation in each of the following years would be:
Marginal Cost Pricing

Under fixed percentage of diminishing line value method

<table>
<thead>
<tr>
<th>Year</th>
<th>Under straight method</th>
<th>Under sinking fund method</th>
<th>Under annuity method</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th</td>
<td>$4.00</td>
<td>$2.10</td>
<td>$8.05</td>
</tr>
<tr>
<td>10th</td>
<td>4.00</td>
<td>2.10</td>
<td>3.21</td>
</tr>
<tr>
<td>15th</td>
<td>4.00</td>
<td>2.10</td>
<td>1.23</td>
</tr>
<tr>
<td>20th</td>
<td>4.00</td>
<td>2.10</td>
<td>.51</td>
</tr>
<tr>
<td>25th</td>
<td>4.00</td>
<td>2.10</td>
<td>.20</td>
</tr>
</tbody>
</table>

The aggregate of the charges in all the years at the end of the 25th year would be 100.00 52.38 99.00 100.00

56. Other methods are: reducing balance; annuity; compound interest or equal annual payment; unit cost; working hour; sum-of-the-year digits.\(^{42}\)

There is no room for a view that FDC is the sole basis for determining whether the rate charged to a particular customer is just and reasonable. The courts have explicitly indicated that flexibility is allowed,\(^{43}\) that there is no prescribed formula,\(^{44}\) and that cost is not a shibboleth.\(^{45}\) Indeed, the New York Court of Appeals has said that the very reason a standard such as "reasonable" is written into a rate statute, is to allow the rate-making body to employ elements which a reflective and ingenious lawmaker might not state.\(^{46}\)

One of the factors other than FDC which has systematically affected ratemaking is ease of administration. No two customers are exactly alike in terms of the costs (however defined) which they impose on the utility. For example, within the residential class of electric customers, in a particular pricing period kWh

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\(^{42}\) 280 U.S. 234, 284-85 & nn. 55 & 56 (1930).
\(^{45}\) Public Serv. Comm’n v. Federal Power Comm’n, 516 F.2d 746 (D.C. Cir. 1975). Cost is the last word even in determining the allowable revenue; more than cost may be allowed, if the public interest will be served. See Mobil Oil Corp. v. Federal Power Comm’n, 417 U.S. 283 (1974).
consumption of two consumers may be identical, and their peak demands may be the same, but their peak use may occur at different times. On the other hand, their peak demands may be equal and simultaneous but total kWh consumption may differ, or peak demands may be equal and simultaneous while the demands at some other important time (important in terms of the costs imposed on the supplier) may differ. Moreover, customers may differ in their distance either from the generating station or from the transmission or distribution transformer.

Nevertheless, it is commonplace in utility ratemaking for all residential customers to be lumped together and called a class, even without evidence that their common characteristic—in this case, the use of the premises to which power is distributed—results in a low variation in the cost-imposing character of their usage. In many situations the resultant “discrimination” can be justified because the metering and other costs of a more finely tuned rate would exceed the cost differentials within the class. But even in the face of clear evidence that the cost of servicing one member of a class is lower, and even if discrete measurement is feasible, that member is not thereby entitled to a lower rate. 47

It has been held that ease of administration is also an adequate reason for subsuming in a single class, all members of which are required to charge the same rate, all the producers of gas in a large area covering many gas fields and hundreds of producers, each with its own costs. Composite cost data were permitted to be used because the use of separate cost data for each producer would be administratively too arduous. 48 It was acknowledged that there would be hardships, and that exceptions would be infrequently permitted. 49

A separate category of criteria often permitted to be used in erecting or in defending a rate structure against a charge of undue discrimination is interclass benevolence. No judicial decision has announced the bold proposition that ratemaking may be used as a lawful means of income redistribution. Such a proposition, in fact, has been explicitly rejected by the South Carolina Commission in Re Carolina Power & Light Co., 50 and by a number of state

49. Id. at 764.
Many cases are illuminating in their details.

Reduced rates, for example, have been upheld on behalf of philanthropic organizations. In a number of states, charities and ministers may so benefit, either with or without a specific statutory provision. It has been held that the equal protection and due process clauses are not violated by permitting students to travel at half-fare, and the Rhode Island Commission has approved a rebate to the elderly. Further, a multiple dwelling used for subsidized housing for the poor may be charged a lower rate than other multiple dwellings because of that use. The effect of rate changes on low-income consumers has also been explicitly taken into account.

In one proceeding on the general restructuring of rates, all of the parties and the hearing examiner agreed that there should be a shift of $1,000,000 of revenue responsibility from industrial and commercial customers to residential customers. The New York Commission found that such a shift was cost justified, but it reduced the shift to $500,000 because, when added to recent fuel cost increases, the shift would cause a hardship to residential customers. The Commission's conclusion, and its reasoning, were accepted in *Legislature of the County of Rockland v. New York Public Service Commission*. This is undisguised income redistribution. Twenty-six days later, however, the same court (with three of the same judges sitting on both five-member panels) rejected a decision of the same commission, with respect to the same utility, that shifted to the general customers for the limited period of one year a portion of the high costs being borne by electric space-heating customers due to the sharp increase in the

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51. E.g., Moore v. Gilbert, 131 Vt. 545, 310 A.2d 27 (1973), and cases cited therein.
utility’s fuel oil prices. The court pointed out that “the cost of home heating oil has reached new heights for the same reason that has caused fuel oil prices to reach new levels.” Users of home heating oil, therefore, would have had to bear their own increases, and part of the electric space-heating increase as well. Thus, the court was not objecting to income redistribution, but to the propriety of its use in this case.

Inasmuch as at least some minimum amount of the utility’s service comes to be seen as a necessity, society may be more willing to have it provided by the utility at a special rate, that is, subsidized by the more affluent consumers. Such a rate provision, known as the Lifeline Rate Concept, is another example of the deliberate use of the utility’s rate structure as a mechanism for income distribution.

In a wide variety of circumstances, departure from FDC has been successfully justified on economic grounds. One difference between FDC and marginal costs, however computed, is that the former includes some previously incurred costs which will not diminish regardless of changes in the volume of business, that is, “sunk” costs. If a railroad loses some freight business, for instance, there may be a reduction in the future outlay for maintenance of the tracks, but there will be no reduction in the “cost” represented by the depreciation of the tracks. Thus, even if two loads have equal costs when the FDC method is used, one may well find that if the same rate is charged for each load the carrier will lose one of the loads because the consumer has a cheaper alternative available.

Cotton shipments from Oklahoma to the Southeast, therefore, were able to bear a loading charge, but if the loading charge were imposed on cotton shipments from Oklahoma to the Gulf of Mexico the business would be lost to the railroad because trucking service was available at a lower rate. A stubborn insistence on uniform rates in the face of that fact would result in the loss of the shipments to the Gulf, thereby forcing the Southeast shipments to bear still higher costs. Plainly, it is in the interest of the Southeast customers to have a discriminatory rate, even though

61. Id. at 341; 337 N.Y.S.2d at 674.
the discrimination is against them in the sense that they will be obliged to pay a higher percentage of costs than the favored Gulf customers. In short, there is discrimination, and as long as the favored customer pays more than the variable costs it is in the interest of the supposed "victim" that there be such. This is perfectly sound from a ratemaking point of view. Of course, if the favored class did not pay at least a modicum in excess of the out-of-pocket, that is, incremental costs it imposed, the unsoundness would be evident, and the rate unlawful.

The principle that such discrimination is not "unjust," that the preference is not "undue or unreasonable," is at least as old as Texas & Pacific Railway v. ICC, in which earlier English cases are cited which noted that forbidding the discrimination "would be prejudicial to the public by tending to increase prices." The courts have consistently taken this view.

This ratemaking principle is applicable to both the aviation and electric industries. The marginalist today would apply this old, simple and accepted concept and say that when the revenue requirement exceeds the marginal costs, the deficiency should be imposed first on the most price-inelastic customers. An increase in the rate to the price-elastic customer would cause the loss of his business, and thus create a greater revenue deficiency which would still further increase the rate to the inelastic customer.

Analogous to the reduced rate designed to retain business which otherwise would be lost is the incentive allowance which is used for the purpose of reducing the amount of fixed costs which the price-inelastic customers must bear. This can take

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65. 162 U.S. 197 (1896).
66. Id. at 230.
67. See, e.g., National Gypsum Co. v. United States, 353 F. Supp. 941 (W.D.N.Y. 1973), and cases cited therein. A situation where the loss of business would redound to the detriment of only the remaining consumers, as the fixed costs could properly be spread among them, is to be distinguished from the case where the loss of business would render useless the plant which had been devoted to servicing that business; in the latter case, if the retention of the business through a promotional rate would not benefit the remaining customers, it may be improper to have them make up the deficiency. Cf. Re Pacific Power & Light Co., 86 Pub. U. Rep. 3d 417, 434 (Ore. Pub. Util. Comm'n 1970).
68. Pan Am. World Airways, Inc. v. CAB, 256 F.2d 711 (D.C. Cir. 1958); Railway Express Agency, Inc. v. CAB, 243 F.2d 422 (D.C. Cir. 1957).
many forms, all designed to induce price-elastic customers to increase their off-peak consumption of electricity or gas; if the revenue obtained from them after adjustment for the allowance exceeds the costs they impose (usually little more than the commodity cost of the electricity or gas) the arrangement is plainly beneficial not only to the favored new off-peak customers, but also to the customers who do not receive the payments or credits. There has been little hesitancy in approving these instances of discrimination. The earliest form of incentive allowances in the electric and gas industries — promotional allowances in connection with the sale of appliances designed to reduce the overall unit costs of the utility — were sanctioned as early as 1940 in In re City Ice & Fuel Co. v. PSC.

As the New York Public Service Commission explained in 1953 in In re Long Island Lighting Co., all tariff provisions which set up classifications of customers and make distinctions between them are discriminatory, but it does not follow that an advantage given to certain classes is necessarily given at the expense of the other consumers, inasmuch as it may benefit consumers as a whole. In such circumstances the discrimination would not be "undue."

Just as a group of customers may be favored, with benefit to all the customers, so it may be necessary to disfavor a group of customers in order to protect the others and in order to give the disfavored group a basis for rational decision as to their consumption. In Re Michigan Power Co., the gas distribution company serving the Upper Peninsula of Michigan was presented with the problem caused by the fact that although all its gas customers were in a single rate classification, the wholesale prices and the sources of pipeline gas to the two areas it served were different. The Commission approved separate purchased-gas adjustment clauses for the two areas. Without using the language of the marginalists, the Commission said that it is

not equitable to require western customers to pay for the higher cost gas when they neither receive now nor can they receive in the future any benefit from that gas. Additionally potential customers in the eastern portion should be made aware — through the price mechanism — of the true cost of providing gas service to them, so that decisions which are more economically rational can be made.\textsuperscript{75}

Thus the only respect in which the customers were different, the differing impact of their new demands on the utility’s costs of meeting those demands, was held to be a sound basis for differing rates.

Another variation of this theme is the use of value of service as a factor in ratemaking. Taken by itself, it may seem objectionable to charge more to a customer merely because the service has a higher value to him; the concept may be seen in a negative light when expressed in the cruder (but quite accurate) term, “what the traffic will bear.” These pejorative notions of value of service stem from the impression that it is a claim to a higher return to the utility than its overall costs warrant.

But, as actually applied, value of service has not been used as a criterion affecting the utility’s overall earnings. Its use has been confined to adjustment of the rate for one class of business as compared with another.\textsuperscript{76} Value of service has been a mechanism for assuring that the rate charged for a particular service will not be so high that the consumer will not use it. The consequence of nonuse would require the allocation of the portion of the fixed costs which that consumer might have borne to those who find the rate attractive. In terms of carriers, if uniform rates were insisted upon regardless of value of service, “this method, while securing practical uniformity, would probably deprive many articles which are now important factors in commerce of the benefit of transportation to distant points.”\textsuperscript{77} Spurr, an authority on this issue, said: “Rates can never be more than the traffic will bear, because anything beyond that would decrease instead of increase

\textsuperscript{75} Id. at 153 (emphasis added).

\textsuperscript{76} Edgerton, Value of Service as a Factor in Rate Making, 32 Harv. L. Rev. 516, 548-56 (1919).

\textsuperscript{77} B. Wyman, Public Service Corporations, ch. 36, § 1234 (1921). The older authorities are discussed, and value of service in this sense applied, in Puget Sound Elec. Ry. v. Railroad Comm’n, 65 Wash. 75, 117 P. 739 (1911). For references to many early cases, see 3 H. Spurr, Guiding Principles of Public Service Regulation 528-537 (1926).
the revenue”;78 and “[v]alue of the service cannot be made the basis of increasing rates beyond the reasonable cost of the service, including the return on capital.”79 Granite State Alarm, Inc. v. New England Telephone & Telegraph Co.80 adds the gloss that when a rate is attacked because it is based on value of service, it can be defended on the ground that when value of service is used, “the customer’s bill can be somewhat controlled by his demand for service,”81 since demand will decline as the rate exceeds the value to the consumer. Recently, in Re Southern Bell Telephone & Telegraph Co.,82 value of service was found to be a significant factor in rate design.

MARGINAL COST PRICING IN PERSPECTIVE

We have seen that in the early years of railroad rate regulation, the difficulty arose that certain points, especially seaports, were able to obtain bulk goods such as grain and hay by water at rates lower than the standard “non-discriminatory” rates of the rail carriers. (Water competition was the particular problem in the early days; later, trucks and buses were the competing modes of transport.) Today we would say that the shippers at those ports were price-elastic customers; that unless they were afforded rates which had the marginal costs as their floor and which were competitive, the rail carrier would lose the business and the rates borne by the price-inelastic inland consumers would be higher because no part of the sunk costs would be shared by the price-elastic business.

The same basic reasoning, reaching the same favorable result, can be found in the earliest ICC cases.83 Although the terminology differed from the terminology used today, the basic concept remained the same. It was found that when competition forced the rate concession, the service was not being given under the same circumstances and conditions with the consequence that the discrimination was not undue. The Court said in East Tennessee, Virginia & Georgia Railway v. ICC:

[Competition which is real and substantial and exercises a potential influence on rates to a particular point, brings into

78. 3 H. SPURR, supra note 77, at 537.
79. Id. at 547.
81. Id. at 237, 279 A.2d at 597.
play the dissimilarity of circumstance and condition provided by the statute, and justifies the lesser charge to the more distant and competitive point than to the nearer and noncompetitive place, and that this right is not destroyed by the mere fact that incidentally the lesser charge to the competitive point may seemingly give a preference to that point, and the greater rate to the noncompetitive point may apparently engender a discrimination against it. We say seemingly on the one hand and apparently on the other, because in the supposed cases the preference is not "undue" or the discrimination "unjust." 8

Today, marginal cost pricing, with the concept of efficiency, is rapidly spreading under its own terminology. 85 The same trend has been observed at the CAB and the ICC. 86 The marginalist ideas for rate structure reform are also often used without marginalist terminology. 87

An example of the use of marginalist ideas without marginalist language is the fate of the Atlantic Seaboard Corp. 88 formula at the FPC. Under that formula, natural gas pipeline rates consisted of a demand charge which equaled half of the fixed costs, and

84. 181 U.S. 1, 19 (1901).
88. 11 F.P.C. 43 (1952).
a commodity charge equal to the variable costs plus the other half of the fixed costs. In 1974, based on principles of economic efficiency, the FPC properly concluded that under present conditions all of the fixed costs should be included in the commodity charge by setting a rate which would be purely volumetric. To avoid disruption, however, the FPC went only part way and placed 75% of the demand cost in the commodity portion of the rate. 89

CONCLUSION

The principles underlying marginal cost pricing and the inverse elasticity rule are thus well within the lawful scope of rate-making agencies. For the most part they have been used, with full judicial support, for almost a century. In any case, rates so determined should not be subject to attack on the basis of fully distributed cost, too crude an instrument for the design of a rate structure and itself subject to being scrapped for reasons of administrative ease, humanitarianism, or economic efficiency.